

MANAGEMENT OF CONCEALED PENIS IN CHILDREN

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SUMMARY

Objectives: A concealed penis or inconspicuous penis is defined as a phallus of normal size buried in prepubic tissue (buried penis), enclosed in scrotal tissue (webbed penis), or trapped by scar tissue after penile surgery (trapped penis). We report our results using a standardized surgical approach that was highly effective in both functional and cosmetic terms. Materials and Methods: From April 2003 to October 2007, Surgery for hidden penis from multiple causes was performed in 80 children. Their age ranged from 10 months to 8 years (mean 4.2 years). Tacking sutures were taken from the subdermis of the ventral penoscrotal junction to the tunica albuginea in some cases. A combination procedure with tacking of the penopubic subdermis to the rectus fascia, penoscrotal Z plasty, circumcision revision or lateral penile shaft Z plasty also was performed in some patients. Results: Cosmetic improvement was noted in all cases except one patient that needed re-fixation of the Buck's fascia to the dermis without significant complications. Conclusions: Surgery for hidden penis achieves marked aesthetic and often functional improvement. Degloving the penis to release any abnormal attachment then fixing the Buck's fascia to the dermis of the skin has an essential role in preventing penile retraction in most cases.

INTRODUCTION

Concealed or inconspicuous penis is an uncommon condition that may present from infancy to adolescence. Inconspicuous penis is a term used in referring to a phallus that appears to be absent or too small (1). Three entities that fall under this term have been described. These conditions are webbed penis, buried penis and trapped penis. Proper treatment is dependent on accurately diagnosing which entity is present.

A webbed penis is a normal-sized penis where the skin of the scrotal sack extends part way up the shaft of the penis. Webbed penis is a common congenital abnormality in which a web or fold of scrotal skin obscures the penoscrotal angle. The condition is either congenital or acquired after circumcision. Removal of what appears to be excessive foreskin without fixation of the penile skin to Buck's fascia can result in inadequate shaft skin, worsening of the condition and scarring. In severe cases the shaft skin may be deficient, requiring rotational flaps or grafts for coverage (2).

A buried penis is a normal-sized penis that lays hidden in the pubic fat pad. The condition might be congenital or acquired after circumcision of a baby with excess suprapubic fat. It is common in infants and toddlers, and occasionally seen in older children and obese adolescents. If the penis can be easily exposed by gently

pulling the penis or by pressure on the surrounding suprapubic fat, the condition will improve spontaneously. The buried penis may result in secondary phimosis, recurrent balanitis and difficulty in voiding or social embarrassment (3).

A trapped penis is a normal-sized penis that is partially stuck in the pubic fat pad. This condition happens when excessive preputial and shaft skin is removed during circumcision in presence of webbed penis or significant scrotal swelling due to huge hernia or hydrocele (2, 3). Scarring or adhesions trap the recessed penis in the fat pad. This condition can predispose children to urinary tract infection or urinary retention, so, surgery is usually indicated in this condition (4).

Many different techniques were prescribed for the different types mentioned above. This depends upon the anatomical variation, presence of dense prepubic fat and presence of associated iatrogenic surgical factors. This study aims to a trial of putting a plan for surgical treatment of different types.

MATERIAL AND METHODS

This study was conducted on 80 consecutive patients undergoing concealed penis repair between April 2003 and October 2007 and was performed in Al-Azhar University Hospitals. In all patients the stretched penile length was appropriate for age. Patient age ranged from 10 months to 8 years. Examples of concealed penis are shown in (fig: 1). Indications for surgery include; recurrent balanitis, secondary phimosis, urinary tract infection, painful voiding, ballooning of the foreskin causing urinary retention, difficulty holding the penis during voiding or social embarrassment (table: 1).

Table (1): Indications for surgery (some children presented with more than one indication)

Diagnosis	No. of patients
Secondary phimosis	30
Cosmoses	28
Recurrent balanitis	8
Ballooning of the foreskin	5
Difficulty holding the penis during voiding	12
Social embarrassment	6
Painful voiding	20
Urinary retention	5
Urinary tract infection	12

Patients were further classified into 3 groups ;(group: 1) congenital concealed penis includes 22 patients, (group: 2) concealed penis due to scarring from previous circumcision includes 47 patients and (group: 3) complex cases include 11 patients involving excessive obesity.

In (group:1), none had previous penile surgery. In (group: 2), all had previously undergone surgery, including circumcision in 42 and hypospadias in 5 patients. Of the 11 boys in (group: 3) 7 had been circumcised and 4 had previous hypospadias repair. In 7 patients of this group, severe phimosis caused ballooning of the foreskin during voiding and continuous dribbling between voids. This stasis resulted in recurrent urinary tract infection in 4 patients and complete urinary retention in 2 patients with the most severe form of buried penis.

Figure (1): Examples of concealed penis.



Repair in all cases started with circumcision incision on the inner preputial mucosa and degloving the penis to its base exposing the penopubic and penoscrotal angles. Then, fixation of the Buck's fascia of the penile shaft to the skin was done in all patients of group 2 and 3 and in 14 patients of group 1. Buck's fascia of the lateral corporeal bodies was sutured to the dermis of the penile skin at the 10 and 2 o'clock positions lateral to the neurovascular bundles using 4 or 5/0 absorbable sutures according to penile size (fig: 2A). Dimpling of these dermal sutures ensures good fixation. Two additional sutures were placed in the same location near the mid shaft of the penis. Reconstructive techniques were then selected according to the situation

of every patient. In (group 1) Byar's flaps using the excess preputial skin and dartos muscle was done in 12 patients (fig: 2B). The two flaps of the Byar's flap were rotated around the penile shaft to cover the defective skin ventrally. Simple transverse cut was done in 6 patients with webbed penis (fig: 2C). In 2 patients, multiple Z-plasties of the ventral penile skin were done ventrally (fig: 2D). In the remaining two patients, scrotal skin flaps were used to cover the ventral skin defect. The excess suprapubic fat was excised in two patients. In (group 2) after degloving the penis, the cicatricial scar that trapped the penis was excised. Byar's flaps could be done in 12. Multiple Z-plasties of the ventral penile skin were used in 16 patients, scrotal skin flaps were used in 10 patients. In the remaining 9 patients, no more reconstructive procedures were done. Examples of surgical techniques were illustrated in (fig: 2). In (group 3) all cases required extensive scar excision, scrotal flaps in 8 and multiple Z-plasties in 4 patients. Excision of the excess suprapubic fat was needed in 2 patients. At this point, in all patient groups, the preputial collar and shaft skin were realigned and sutured as in standard circumcision. The penis was covered by gauze dressing and was kept for 1-5 days according to procedures.

Figure (2): Illustrates examples of surgical techniques.



(A) Degloving the penis and fixation of the Buck's fascia of the lateral corporeal bodies to the dermis of the skin.



(B) Fashioning of Byar's flap for ventral reconstruction of a webbed penis.



(C) Simple transverse cut of a webbed penis.



(D) Multiple Z-plasties using scrotal skin flaps.

RESULTS

The mean follow-up period was 2 years (range 6 months to 4 years). Complications were minor, transient and infrequent. Surgical results were uniformly good in (group 1) patients except in 1 who was believed to have excessive suprapubic fat that needed liposuction later on. In (group 2) patients, two had retained excessive suprapubic fat and 2 had some unsightly scarring but no surgery was needed to them. Of the 11 patients of group 3, 10 had a good result and required no additional surgery. One patient needed revision due to improper fixation of the penile shaft to the penile skin. Degloving the penis and fixation of the Buck's fascia to the skin as prescribed before solved the problem. Balanitis was treated with antibiotics. Patients who had balanitis preoperatively were most likely to have persistent irritation postoperatively, and 2 required antibiotics. No more evidence of penile retraction or inadequate skin coverage occurred in the other cases. On other hands, no ischemia of the skin flaps or the dorsal penile skin had happened.

DISCUSSION

Surgical correction of the concealed penis is a difficult challenge and the technique depends on understanding the type and the anatomical abnormality in the penis. Two classification systems of the buried penis have been proposed. The classification system proposed by Crawford includes 3 broad categories, concealed penis, buried penis (partial or complete) and penoscrotal webs (5). The Maizels et al proposed a classification system consisting of 4 categories based on the mechanism of the concealment, buried penis, webbed penis, trapped penis and micropenis (6).

Many theories tried to explain the cause of buried penis and upon these, different procedures have been described. Re-evaluation of the anatomy of this condition suggests that it results from a failure of separation of the migrational planes in the developing male external genitalia. During the sixth week of development, the

scrotal swellings start to appear on either side of the urethral folds. At the cranial tip of the urethral folds is the genital tubercle; this rapidly elongates into the phallus, pulling the urethral folds forward. The urethral folds fuse over the urethral plate to form the penile urethra. Meanwhile, the scrotal swellings, which are initially found in the inguinal region, migrate caudally, where they unite across the scrotal septum. If these developmental planes fail to separate, the penile corpora are tethered to the deep fascia, while the scrotum remains high up in the groin (7, 8). Historically, a variety of surgical techniques that produced excellent short-term results have been reported. In 1972 Perlmutter and Chamberlain demonstrated the benefit of releasing the penoscrotal webbing (9). In 1977, Johnston described dorsal tacking of suprapubic dermis to achieve greater dorsal length (10).

Crawford published his 20 years of experience that included successful repair in 6 patients, recommended treatment at an early age, and described a dorsal S incision and de-tethering procedure(6). Horton et al introduced surgical removal of suprapubic adipose tissue (11). In 1986 Donahoe and Keating described their technique of preputial unfurling in 4 patients with buried penis (12). In 1987, Shapiro presented data on the treatment of 80 patients with buried penis using dorsal relaxing incisions combined with the Heinecke-Mikulicz type ventral incisions for scrotal webbing (13). Maizels et al used a suprapubic approach to incise the suspensory ligament of the penis and perform lipectomy of the suprapubic fat pad. The dermis and subcutaneous skin at the base of the penis were anchored to the periosteum of the pubis (6). According to this, Smeulders et al described the benefit of dissection of the penile skin from the Buck's fascia to release the penis from its deep tethering (14). This benefit is gained in this study by degloving the penis down to the penopubic and penoscrotal angles. Cromie et al stressed on that the major anatomical defect in buried penis is an insufficient attachment of the dartos fascia and penile skin to Buck's fascia. Therefore, they stressed on the importance of suturing the penile dermis to the lateral aspect of tunica albuginea at the penopubic junction and mid shaft of the penis (15). In this study, we combined this technique with complete degloving the penis releasing any tethering tissue. In this study, the patients were classified into three classes (group 1, 2 and 3) as classified by Casale et al (2).

In this study, the stretched penile length was normal in all cases. Some of our patients had prominent prepubic fat pads postoperatively. However, with this procedure these pads have little or no effect because the skin remained attached along the penile shaft and it is not pushed by the fat pad. Degloving the penis and fixation of the penile shaft to the dermis in all patients is believed to be the most important role in preventing the penile retraction and solving the problem of inconspicuous penis. This is because degloving the penis releases any abnormal attachment between the penile Buck's fascia and the dermis of the skin and fixation of the Buck's fascia to the penile shaft skin prevented any new retraction of the penis even in presence of prominent suprapubic fat in some patients. The choice of the different techniques for covering the penile shaft with skin depended upon the available excess skin with preferring the Byar's flap technique when it is feasible especially in uncircumcised

patients. These techniques appear to have a little role, in preventing penile retraction and its main aim is to cover the skin defect. The excessive suprapubic fat was an evident accessory factor in inconspicuous penis in some cases that needed excision during surgery whether by surgery or by liposuction. In our study most patients were under group 2 due to the wide spreading of the circumcision in our Islamic countries. In the study done by Cromie et al (15), the fixation of the Buck's fascia was done in selected patients in each group. In our study, the patients with congenital webbed penis are the only patients that didn't need fixation of the penile shaft to the skin. In all other patients we found preoperatively, that the penis needs to be stretched and fixed to the skin to have proper result. Therefore, by this way, no single technique can be considered to solve the problem of inconspicuous penis but degloving the penis and fixation of the penile shaft to the skin appears to be essential in most cases without any significant complications from this.

CONCLUSION

The concealed penis can occur due to a variety of causes, and thus understanding the etiology is essential for a satisfactory repair. Concealed penis may be treated with a number of surgical techniques. Suprapubic fat pad has a worsening effect and in some cases liposuction or surgical excision is essential. Degloving the penis and fixation of the penile shaft to the skin has an essential role to solve this problem.

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المخلص العربي

مناجزة أمراض العضو الذكري الغير ظاهر عند الأطفال

العضو الذكري المخفي هو عبارة عن عضو ذكري طبيعي من حيث الحجم وهو اما أن يكون مدفونا في دهون منطقة العانة أو مخفيا في انسجة كيس الصفن أو محتجزا نتيجة وجود انسجة ليفية مروحية بعد عمل تدخل جراحي. في هذه الدراسة نحن نسجل نتائجنا مستخدمين طرق جراحية ثابتة ذات فاعلية عالية للحصول على عضو ذكري سليم من حيث الوظيفة والشكل الجمالي.

المرضى والطرق: أجريت هذه الدراسة لتصليح العضو الذكري المخفي من ابريل 2003 وحتى اكتوبر 2007 على 80 مريضا تتراوح أعمارهم من 10 شهور وحتى 8 سنوات وقد تم في هذه الدراسة عمل غرز تثبيتية تبدأ من تحت الجلد مباشرة عند منطقة ملتقى العضو الذكري مع كيس الصفن مثبتة في احدى الطبقات المغلفة للعضو الذكري في بعض الحالات. كما تم ايضا استخدام طريقتين معا وذلك بأخذ غرز تثبيتية تبدأ من الطبقة تحت الجلد مباشرة الى الطبقة المغلفة للعضلة الأمامية بجدار البطن أو عمل شكل (زد) في منطقة ملتقى العضو الذكري مع كيس الصفن أو اعادة عملية الطهارة مرة أخرى أو عمل شكل (زد) على جانبي العضو الذكري بعض الحالات.

النتائج: لوحظ تحسن شكلي في كل الحالات ماعدا حالة واحدة التي احتاجت اعادة تثبيت الجلد مع طبقة باكس بدون حدوث أى مشاكل .

الخاتمة: لقد ثبت أن التدخل الجراحي لتصليح العضو الذكري المخفي يحقق شكلا وظيفيا وجماليا رائعا او عالي المستوى. كما أن تحرير الجلد من على العضو الذكري من أجل القضاء على أى التصاقات والحصول على عضو ذكري حر مع تثبيت باكس بالجلد لة دور فعال في منع تراجع العضو الذكري في معظم الحالات.